



# LABORATORY Spotlight

The National High Magnetic Field Laboratory

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## Summer 2001 Research Experiences for Undergraduates and Teachers

While most education facilities slow down during the summer months, the NHMFL's Center for Integrating Research and Learning is more active than ever. Tours, outreach, and teacher workshops continue even as the Center hosts 17 students and 17 teachers through its Research Experiences for Undergraduates (REU) and Research Experiences for Teachers (RET) Programs. In addition, two high school students and one middle school student are earning credit for their work with mentors at the NHMFL. The Center is also preparing for an extremely active fall schedule of statewide teacher workshops and classes for fourth graders from local schools.

Successful Center programs depend upon the relationship among teachers, scientists, researchers, and Center staff. Without a willing and committed cadre of dedicated mentors, the REU and RET programs could not exist. Any scientist or researcher who has mentored students or teachers can tell you that it requires dedication and a great deal of time. REU mentors provide a structured research experience that can culminate in a published article with students as co-authors. NHMFL mentors at all three sites routinely provide meaningful experiences for students, spending hundreds of hours making sure that students complete their work, present their results, and learn about careers in science. RET mentors have a commitment to public education, the enhancement of science education, and the role of teachers as translators for the science community. We are extremely pleased to recognize our student REU participants, teacher RET participants, and mentors in the table (on next page).

In addition to the REU and RET program participants, the laboratory integrated three secondary-level students into ongoing research and engineering activities: Nathan Scott, rising senior, worked with Danny Crook in MS&T; John Reilly, senior, worked with George Miller in MS&T; and Chase Pheifer, 8th grade, worked with Dianne Walker in an affiliated program, the Sensory Research Institute.

*Science, Tobacco & You* workshops continue nationwide and the Center is anticipating five more sessions in the State of Florida during the 2001-2002 academic year. In addition to teacher workshops during the school year, Center educators are teaming up with area teachers, the FSU Physics Department, and the Office of Science Teaching Activities at FSU to facilitate a 2-week summer institute on Motion, Forces, and Energy. NHMFL sessions will include a tour of the laboratory and hands-on activities and demonstrations on magnets, magnetism, electricity, and related concepts.

Pat Dixon, Director of CIRL, Sam Spiegel, former Director of CIRL, and Gina Lafrazza-Hickey, Education Specialist, recently published "Looking, Thinking, Asking, Learning How Your Body Works." A large-format book for students and teachers on human anatomy, the book was created to fill a gap for elementary classrooms studying the respiratory, circulatory, nervous, and muscular systems and to advance science education through NHMFL resources. Another publication, "Eroding Brick and Bureaucratic Walls: Oral and Written Interaction as Means of Curriculum Coherence," appeared in the Spring 2001 issue of the *Journal for the Art of Teaching*, co-authored by Pat Dixon.



The Center is looking forward to expanding its outreach to area students and teachers during the 2001-2002 academic year.

Student	Home Institution	Mentor	Research
Adam Abate	Harvard University	Stan Tozer	Fermi measurements on the lanthanum 218s
Jill Adcox	University of Florida	John Eyer	Inductively coupled plasma Fourier transform ion cyclotron resonance
Joshua Alwood	University of Florida	Gregory Stewart	Specific heat measurements of the $U_2(Ni_xCO_{1-x})^2$ in system
Norman Anderson	Iowa State	Alex Lacerda	Experimental techniques in low temperature physics
Tom Bemben	University of Florida	Alex Angerhofer	The effects of bond length on g-factors with liganded chlorophyll a and Bacteriochlorophyll
Jiawen Chen	Cornell University	Scott Smith	A python interface to the "GAMMA" magnetic resonance library
Rick Clinite	Cornell University	James Brooks	Temperature dependence in organic conductors
Alisha Elsebough	Florida State University	Roy Odom	Techniques for creating specified magnetic fields with superconducting magnets
Michael Fanous	Columbia University	Cesar Luongo	Creating specified magnetic fields with superconducting magnets
Nathaniel Hammond	Florida State University	Peter Kalu	Material microstructure & characterization
Stephanie Howse	FAMU	Roy Odom	Techniques for creating specified magnetic fields with superconducting magnets
Kristen Johannessen	New College of USF	Martin Kendal-Reed	Responses to n-amylacetate in normosmics
Misha Lipatov	Harvard	Justin Schwartz	Investigation of sintering & metal-coating techniques of magnesium diboride
Kenneth Purcell	Western Kentucky	Jack Crow/Scott McCall	A study of Na doped $SrRuO_3$
Shelly Ann Ramrattan	Columbia University	Roy Odom	Techniques for creating specified magnetic fields with superconducting magnets
Haley Showman	William & Mary	Jack Crow/Gang Cao	Isotope effect on magnetic properties of $SrRuO_3$
Corinne Teeter	University of Washington	Steven Van Sciver	Heat flow in silver submerged in liquid helium
Teacher	Grade Level	Mentor	Research
Logan Chalfant	High School	Jack Crow/Gang Cao	Construction & testing of superconductor Y-123
Patricia Cramer	Middle School	Martin Kendall-Reed	Olfaction makes sense
Kristina Dugger	Pre-service	Patricia Dixon	Educational teacher outreach
Alison Gerry	Pre-service	Arneil Reyes/Phil Kuhns	Macroscopic model of nuclear spin
Susan Goracke	Elementary	Bob Goddard	Crystalline & chemical structure of cans
Matt Guyton	Middle School	Justin Schwartz	Superconducting tape properties
Thomas Hawkins	Elementary School	James Brooks	Granular physics
Robert Hoffman	High School	James Brooks	Granular physics
Toyka Holden	High School	Bob Goddard	Crystalline & chemical structure of cans
Dawn Housser	Pre-service	Roy Odom	Spanish moss project
Richard McHenry	High School	Stan Tozer/Eric Palm	Developing cantilevers from chemical etching process
Dan Nelson	Elementary School	James Brooks	Granular physics
David Rodriguez	Middle School	Roy Odom	Spanish moss project
Lynne Sapp	Middle School	Roy Odom	Spanish moss project
Alan Turner	Elementary School	Justin Schwartz	Superconducting tape properties
Bailey White	Pre-service	Martin Kendal-Reed	Olfaction makes sense
Linda Wolters	Elementary School	Arneil Reyes/Phil Kuhns	Macroscopic model of nuclear spin